

IN THE CLAIMS

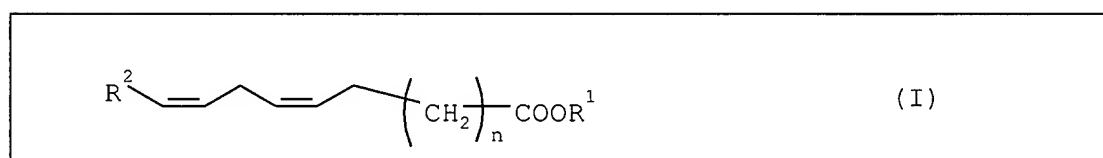
1. (currently amended) An isolated nucleic acid sequence which encodes a polypeptide with desaturase activity, selected from the following group:
 - a) a nucleic acid sequence with the sequence shown in SEQ ID NO: 1,
 - b) nucleic acid sequences which, as a result of the degeneracy of the genetic code, are derived from the nucleic acid sequence shown in SEQ ID NO: 1,
 - c) derivatives of the nucleic acid sequence shown in SEQ ID NO: 1 which encode polypeptides with the amino acid ~~sequences~~ sequence shown in SEQ ID NO: 2 and which have at least 75% homology at amino acid level without ~~substantially~~ reducing the enzymatic activity of the polypeptides to less than 10% of the activity of the polypeptides with the amino acid sequence shown in SEQ ID NO: 2.
2. (previously presented) A protein encoded by a nucleic acid sequence as claimed in claim 1.
3. (previously presented) A protein as claimed in claim 2, encoded by the sequence shown in SEQ ID NO: 1.
4. (currently amended) A nucleic acid construct comprising a the nucleic acid sequence as claimed in claim 1, where the nucleic acid sequence is linked to one or more regulatory ~~signals~~ sequences.
5. (currently amended) A vector comprising a the nucleic acid sequence as claimed in claim 1 or a nucleic acid construct comprising said nucleic acid sequence linked

to one or more regulatory ~~signals~~ sequences.

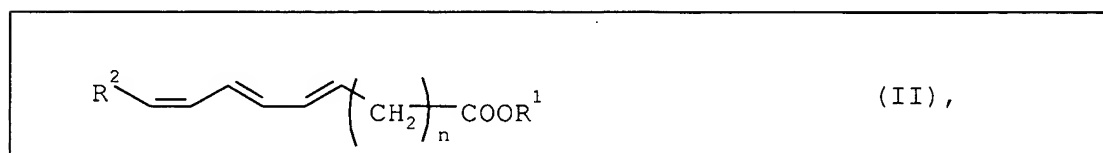
6. (currently amended) ~~An~~ A non-human organism comprising ~~at least one the~~ nucleic acid sequence as claimed in claim 1 or at least one nucleic acid construct comprising said nucleic acid linked to one or more regulatory ~~signals~~ sequences.
7. (currently amended) ~~An~~ The non-human organism as claimed in claim 6, which is a plant, a microorganism or an animal.
8. (currently amended) A transgenic plant comprising ~~a functional or nonfunctional~~ the nucleic acid sequence as claimed in claim 1, wherein said nucleic acid sequence is functional or nonfunctional, or a functional or nonfunctional nucleic acid construct comprising said nucleic acid linked to one or more regulatory ~~signals~~ sequences.
9. (currently amended) A process for the preparation of unsaturated fatty acids, which comprises introducing ~~at least one the~~ nucleic acid sequence as claimed in claim 1 or ~~at least one a~~ nucleic acid construct comprising said nucleic acid linked to one or more regulatory ~~signals~~ sequences into an ~~oil-producing~~ organism, growing this organism, isolating ~~the~~ oil contained in the organism and liberating ~~the~~ fatty acids contained in the oil.
10. (currently amended) A process for the preparation of triglycerides with an increased content of unsaturated fatty acids, which comprises introducing ~~at least one the~~ nucleic acid sequence as claimed in claim 1 or ~~at least one a~~ nucleic acid

- construct comprising said nucleic acid linked to one or more regulatory ~~signals~~ sequences into an oil-producing organism, growing this organism and isolating the oil contained in the organism.
11. (currently amended) A process for the preparation of saturated fatty acids, which comprises introducing ~~at least one~~ the nonfunctional nucleic acid sequence as claimed in claim 1 or ~~at least one~~ a nonfunctional nucleic acid construct comprising said nucleic acid linked to one or more regulatory ~~signals~~ sequences into an oil-producing organism, growing this organism, isolating the oil contained in the organism and liberating the fatty acids contained in the oil.
12. (currently amended) A process for the preparation of triglycerides with an increased content of saturated fatty acids, which comprises introducing ~~at least one nonfunctional~~ the nucleic acid sequence as claimed in claim 1, wherein said nucleic acid sequence is nonfunctional, or ~~at least one~~ a nonfunctional nucleic acid construct comprising said nucleic acid linked to one or more regulatory ~~signals~~ sequences into an oil-producing organism, growing this organism and isolating ~~the~~ oil contained in the organism.
13. (currently amended) ~~A~~ The process as claimed in claim 9, wherein the unsaturated fatty acids have an increased calendulic acid content.
14. (currently amended) ~~A method~~ The process as claimed in claim 9, wherein the organism is a plant or a microorganism.

15. (original) An unsaturated fatty acid prepared by a process as claimed in claim 9.
16. (original) A triglyceride with an increased content of unsaturated fatty acids prepared by a process as claimed in claim 10.
17. (original) A saturated fatty acid prepared by a process as claimed in claim 11.
18. (original) A triglyceride with an increased content of saturated fatty acids prepared by a process as claimed in claim 12.
19. (canceled)
20. (previously presented) A method for isolating a genomic sequence comprising homology screening with the nucleic acid sequence as claimed in claim 1 or a fragment thereof.
21. (canceled)
22. (original) An enzyme which converts a fatty acid of the structure I,

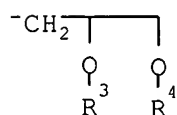


which has two double bonds separated from each other by a methylene group, to give a triunsaturated fatty acid of the structure II,



the three double bonds of the fatty acid being conjugated and the substituents and variables in the compounds of the structures I and II having the following meanings:

R^1 = hydrogen, substituted or unsubstituted, unsaturated or saturated, branched or unbranched C_1 – C_{10} –alkyl–,



R^2 = substituted or unsubstituted, unsaturated or saturated C_1 – C_9 –Alkyl–

R^3 and R^4 independently of one another are hydrogen, substituted or unsubstituted, saturated or unsaturated, branched or unbranched C_1 – C_{22} –alkylcarbonyl or phospho–, $n = 1$ to 14.